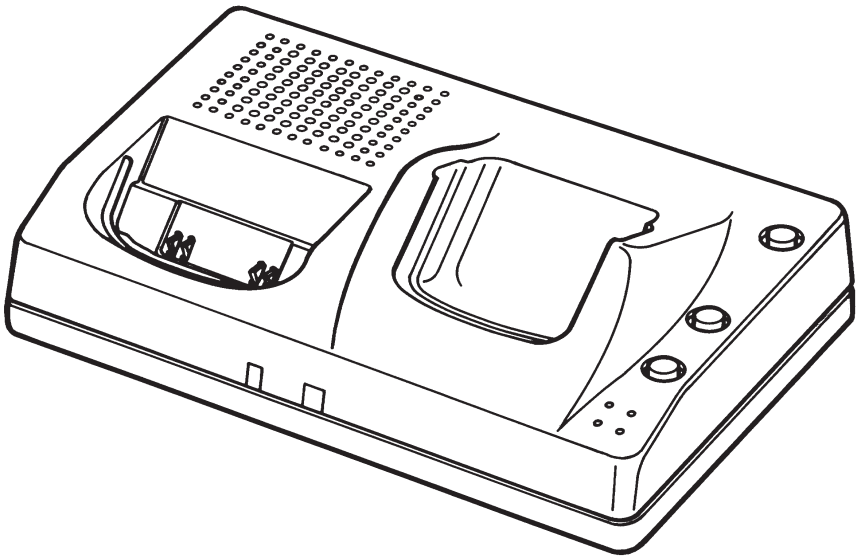
After Sales Technical Documentation

HANDSFREE DESKTOP CHARGER CHH–7



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HANDSFREE DESKTOP CHARGER CHH–7

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Introduction

The CHH–7 Handsfree Desktop Charger provides both charging and handsfree facilities. The charger enables a phone plus a spare battery to be charged; the spare battery is charged after the phone battery has been charged. CHH–7 can only be powered by the AC Power Supply (ACS–6U/X/E); the supply is connected to the charger via a socket at the rear of the charger.

Analogue data accessories may be used in conjunction with the Handsfree Desktop Charger; a connector at the rear of the charger is provided for this purpose.

The BABT approved version of CHH–7 is known as CHH–7X. Since both units are technically identical, all references to CHH–7 equally apply to CHH–7X.

Technical Summary

Operation

CHH–7 consists of a spare battery charging control processor, charging indicators and a switched mode power supply for charging the phone and the spare battery. The unit has an in–built hf–speaker and hf–microphone but the handsfree function is generated in the phone. There are also three operating buttons: the front one is a MUTE button for the CHH–7 microphone; the middle one is for redialling the last number dialled; and the rear one is for selecting the spare battery discharge.

List of Modules

Table 1. List of Modules

NAME OF MODULE	TYPE CODE	MATERIAL CODE	NOTES
HF Deskstand Charger	CHH–7	0675040	Fully Assembled Charger
HF Desktop Charger and Connector Module	DCXH	0200335	A single PCB biscuit containing both the HF Desktop Charger and Connector Module
HF Desktop Charger	DC3H	0200334	Main Electronic Components and Connector
Connector Module	DC4H	0200295	System Connectors, Data Buffer and Noise Comp
Assembly Parts	MCHH7	0260338	Mechanical Parts,Speaker, Microphone and Flex Foils

Basic Specifications

Table 2. Basic Specifications

Power Consumption	13W max.
Input Voltage Range	13.5V to 21.0V
Battery Charger: Output Voltage Output Current	10.0V to 13.0V 730mA to 870mA
Maximum Charging Time (empty battery):	BTH–8S (400mAh): 45min BTH–8H (500mAh): 55min BTH–8SM (800mAh): 70min BTH–8HM (1100mAh): 100min
Maximum Discharging Time (full battery):	BTH–8S (400mAh): 3h 30min BTH–8H (500mAh): 4h 20min BTH–8SM (800mAh): 7h BTH–8HM (1100mAh): 8h 40min
Operating Temperature	+5°C to +55°C
Charging Temperature	+5°C to +45°C (40°C when fitting battery)
Speaker Output Power	nominal: 1W / 8ohm
External Main Dimensions	43mm (H) x 167mm (W) x 113mm (D)
Weight	360g

NOTE: To ensure the battery is fully charged, it is recommended to continue charging for 2 to 3 hours after a fast charge has been completed.

Technical Specifications

Modes of Operation

Power Off Mode:	The unit receives no power at the DC–connector.
Standby Mode:	The unit receives the supply voltage at the DC–connector. The processor is running but because there isn't a phone or spare battery in the cradle, the charger remains off and the audio functions are inactive.
Active Mode:	The telephone or spare battery is in the cradle so the charging functions are active. Normally the handsfree speaker is muted. During a call and during the key beeps or alarming tones the speaker and corresponding audio switches are open.

DC Characteristics

Table 3. Supply Voltages and Power Consumption on the Connectors of CHH–7

CONNECTOR Pin/Connector	LINE SYMBOL	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
DC 1 / X100	VDC Input Voltage Input Power	 13.5V	 13.8V	 21.0V 13.0W
SPARE BATTERY X101, X102 X103, X104	VBAT Charging: Output Voltage Output Current Discharging: Input Voltage Input Current	 11.0V 730mA 5.0V 130mA	 12.2V 800mA 6.0V 160mA	 13.0V 870mA 7.5V 200mA
SYSTEM 10 / X701	VC Charging: Output Voltage Output Current	 11.0V 730mA	 12.2V 800mA	 13.0V 870mA
DATA Analogue 2 / X510	VD Output Voltage Output Current	 9.6V	 10.0V	 10.4V 50.0mA

Table 4. Supply Voltages and Power Consumptions on the DC3H–module

SYMBOL/ MODULE	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
+VI	Power Supply	13.5V	13.8V	21.0V 13W
+VCC	Charging voltage for the battery	10.3V 730mA	11.5V 800mA	13.3V 870mA
+10VA	Supply for logic and analogue parts	9.6V	10.0V	10.4V 250mA
+10VAS	Switched supply for logic and analogue parts	9.1V	9.8V	10.2V 250mA
+5V	Supply for logic parts	4.9V	5.0V	5.1V 35mA
+5VREF	Reference voltage for uP	4.9V	5.0V	5.1V 1.5mA
+5VLD	Supply voltage for LEDs	4.9V	5.0V	5.1V 30mA
+5VAN	Supply for analogue parts	4.6V	5.0V	5.1V 1mA
+VAREF	Reference voltage for analogue parts	2.2V	2.5V	2.7V 0.1mA

AC Characteristics

Table 5. External Microphone signal

XMIC (1 kHz)	TYPICAL/NOMINAL
Cable level 0 dBmO	200mV 415mV

Table 6. Handsfree Microphone Signal

HFMIC (1 kHz)	TYPICAL/NOMINAL
MRP	+15.3dBPa / 50 cm (Mic Ref Point)
HFMIC input	–4.7dBPa (approx 20dB attenuation)
Gain for HFMIC	40dB
Cable Level	200mV

Table 7. External Earphone Signal

XEAR (1 kHz)	TYPICAL/NOMINAL
Cable Level 0 dBmO	130mV 411mV

Table 8. Handsfree Speaker Signal

HFSP (1kHz)	TYPICAL/NOMINAL
Cable Level	130mV
Gain for HFSP	23dB

Table 9. Audio Specifications

f = 1 kHz	MINIMUM	TYPICAL/NOMINAL	MAXIMUM
HF Microphone Sensitivity (0dB = 1V/Pa)	–44dB	–42dB	–40dB
Sending Idle Noise		–61dBmO	
HF Speaker: SPL (1W @ 1m)	+78dB	+80dB	+82dB
Receiving Idle Noise		–52dBPa (A)	
Speaker Output Power		1W/8Ω	

External Signals and Connections

Table 10. List of External Connectors

CONNECTOR	MODULE	NOTES	DESCRIPTION
SYSTEM	DC4H	CHH–7 <——> Phone	10 connections
SPARE BATTERY	DC3H	CHH–7 <——> Spare Battery	4 contact springs
DATA	DC3H	CHH–7 <——> Data Accessory	10 pins modular connector
DC	DC3H	CHH–7 <——> Power Supply	6.3 mm DC–Jack

Table 11. DC Connector X100

PIN	LINE/ SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
1	VDC	Supply voltage Supply power	13.5V	13.8V	21.0V 13.0W
2	DGND	Power supply ground	0V	0V	0V

Table 12. Spare Battery Connector X101, ...X104

CONTACT/ SPRING	LINE/ SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
X104	GND	Supply power ground	0V	0V	0V
X103	BTEMP	Battery temp sensing		2.47V	
X102	BSI	Battery size identification.		613mV (400mAh) 764mV (500mAh) 1.53V (800mAh) 2.29V (1100mAh)	
X101	VBAT	Charging voltage Charging current	11V 730mA	12V 800mA	13V 870mA

Table 13. System Connector X701

PIN	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
5	GND	Power supply ground	0V	0V	0V
9	XMIC	Microphone signal dc–level output impedance		200mV 2.5V	 700Ω
8	AGND	analogue ground	0V	0V	0V
7	M2BUS	Serial bidirection data	0V 3.0V 0V 3.6V		0.7V Input ”0” state 5.25V Input ”1” state 0.35V Output ”0” state 5.25V Output ”1” state

Table 13. System Connector X701 (continued)

PIN	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
3	HOOK	Selects handsfree operation	0V	0V	0V
6	VC	Supply / Charging	11V 730mA	12V 800mA	13V 830mA
10	GND	Power supply ground	0V	0V	0V
4	XEAR / HFJPWR	Earphone signal dc–level input impedance	 10kΩ	130mV 2.5V	
		CHH–7 power switch		5.0V (power off) 2.5V (power on)	 0.8V (test mode for power off watch–dog)
1	VC	Supply / Charging	11V 730mA	12V 800mA	13V 870mA
2	XEXAUD	Not used			

Table 14. Data Connector X510

PIN	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
2	+VD	Supply voltage Supply current	9.6V	10.0V	10.4V 50mA
3	DGND	Supply power ground	0V	0V	0V
4	M2BUS	Serial bidirection data	0V 3.0V 0V 3.6V	 0.2V 4.7V	0.7V Input ”0” state 5.25V Input ”1” state 0.35V Output ”0” state 5.25V Output ”1” state
1, 5		Not Used			
6		Not Used			
7	AGND	analogue ground	0V	0V	0V
8	XMIC	Microphone signal dc–level output impedance		200mV 2.5V	 700Ω
9	XEAR	Earphone signal dc–level input impedance	 10kΩ	130mV 2.5V	

Internal Signals and Connections

Table 15. List of Internal Connectors

CONNECTOR	MODULE	NOTES	DESCRIPTION
Internal System Connector	DC3H/ DC4H	DC3H: X500 <–> DC4H: X700	10 connections, flex foil
Spare Battery Connector	DC3H	X101...X104 <—> Battery Conn.	Contact Springs
Speaker Connector	DC3H	X460 <—> Hf–speaker	2 connections, wires
Microphone Connector	DC3H	X440 <—> Hf–microphone	2 connections, wires

Table 16. Internal System Connectors X500 / DC3H and X700 / DC4H

PIN AT X700	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/ NOMINAL	MAXIMUM
1 2	VC	Supply / Charging	11V 730mA	12V 800mA	13V 830mA
5	M2BUS	Serial bidirection data	0V 3.0V 0V 3.6V		0.7V Input ”0” state 5.25V Input ”1” state 0.35V Output ”0” state 5.25V Output ”1” state
8	AGND	analogue ground	0V	0V	0V
7	XEAR	Earphone signal dc–level input impedance	 10kΩ	130mV 2.5V	
6	AGND	analogue ground	0V	0V	0V
9	XMIC	Microphone signal dc–level output impedance		200mV 2.5V	 700Ω
10	AGND	analogue ground	0V	0V	0V
3 4	DGND	Power supply ground	0V	0V	0V

Table 17. Speaker Connector X460 / DC3H

PIN	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/NOMINAL	MAXIMUM
1	HFSPK	HF Speaker Signal Load Impedance Output Power		 8Ω 1W	2.83V
2	AGND	analogue Ground	0V	0V	0V

Table 18. Microphone Connector X440 / DC3H

PIN	LINE SYMBOL	PARAMETER	MINIMUM	TYPICAL/NOMINAL	MAXIMUM
1	HFMIC	HF Microphone Output Voltage (without load) Input Impedance		4.7V 1.0kΩ	
2	AGND	analogue ground	0V	0V	0V

Mechanical Characteristics

Table 19. Mechanical Characteristics

UNIT	DIMENSIONS (mm) (W x H x D)	WEIGHT (g)	NOTES
CHH–7:			Colour: Warm Black
DCXH PCB includes DC3H and DC4H modules	155 x 1.6 x 94.5		PCB has 6 layers / 1.6mm
flex foil	65 x 9		System connector flex
DC4H–module:	50 x 1.6 x 22		PCB has 6 layers / 1.6 mm

User Interface Features

Charging takes place at a battery temperatures of between 5˚C and 45˚C. Control of the charging process for the phone is performed by a microprocessor located inside the phone; control of the charging process for the spare battery is performed by a separate microprocessor located in the HF desktop charger. The phone is always charged first, followed by the spare battery. When a spare battery is fitted, the temperature must be less than 40˚C to prevent overcharging an already hot battery.

A battery provides a larger capacity if it is occasionally discharged completely. The user can do this by using the ‘deep discharge‘ feature. This feature only operates with the spare battery slot. With the battery located in the spare slot, the spare battery will automatically be discharged and then re–charged to full capacity when the ‘discharge‘ –button is depressed. If this button is pressed twice the discharge function is cancelled.

Charge States and Charge Control

Charge current for the phone is supplied through a series connected switching transistor located in the phone. When this transistor is on, the charger is supplying a constant current to the phone. This is the rapid charge mode.

When the transistor is off, no current is supplied to the phone and the charger is in the constant voltage mode.

Having been charged up in the rapid charge mode, the battery is kept fully charged by using pulsed charging, ie. switching power alternately on and off at a variable duty cycle and a frequency of a few Hz.

The desktop charger also contains control logic for spare battery charging, which is enabled when no phone is connected or when the phone is in the pulsed charge mode. When the phone is in pulse charge mode the spare battery can only be charged at 70% of the rate when no phone is present.

Charge Indication to User

The desktop charger has dual–colour LEDs to indicate the charge state of the phone and the spare battery, the right hand LED is for the phone and the left hand LED is for the spare battery. The LEDs are off when there is no phone or spare battery connected.

Right LED for phone:

Red phone LED indicates that the phone battery is being charged in fast charge mode or charging is disabled due to battery temperature being outside permissible range.

Green phone LED indicates that the phone battery is full and that trickle charge mode is active.

Left LED for spare battery:

Red spare battery LED indicates that the battery is not full; either there is a fast charge mode active or charging is disabled due to a battery temperature ’fault’ or the phone is being fast charged.

Green spare battery LED indicates that the battery is fully charged.

Flashing red spare battery LED indicates that a discharge cycle is active.

The liquid–crystal display of the phone also contains a three–bar battery charge display. ”Charging sequence active” (state A) is indicated by the bars illuminated sequentially, starting from the bottom bar (each bar is on for a period of 1 s).

”Battery full” (state B) is indicated by all three bars steadily illuminated.

Table 20. Phone Operating Status

PHONE OPERATING STATUS	RIGHT HAND LED	PHONE DISPLAY
Desktop charger connected to mains through ac adapter, phone disconnected	–	–
Rapid charge or waiting for the right temperature (+5°C to +45°C)	red	state A (bars illuminated sequentially)
Battery full – trickle charge	green	state B (all bars steadily illuminated)

Table 21. Spare Battery Operating Status

SPARE BATTERY OPERATING STATUS	LEFT HAND LED
Desktop charger connected to mains through ac adapter, spare battery disconnected	–
Rapid charge of spare battery or waiting for the phone charging ready or for the right temperature	red
Spare battery full – trickle charge	green
Discharge of spare battery	flashing red

Handsfree Function

When located in the charger, the phone always operates in handsfree mode; the charger's internal HF speaker and HF microphone being active during the call. It is also possible to switch between handsfree and handset operation while a call is in progress. This is done by removing the phone from the charger (to return to handset operation) or placing it in the charger (to return to handsfree operation).

The HF speaker volume is adjusted using the volume keys located on the side of the phone. The HF volume level is set independently from the phone's internal earpiece volume; the HF volume setting is stored in the phone's memory when the phone is removed from the charger. The HF microphone audio can be muted by pressing the mute key on the front edge of the charger. The muted state is indicated by the message "MUTE" appearing on the phone's display. Pressing the "MUTE" key a second time cancels the mute function.

Environmental Conditions

Temperature Conditions

Table 22. Allowed Ambient Temperature

ENVIRONMENTAL PARAMETER	VALUE
Operating Temperature	– 5 to + 55°C (charging: + 5 to + 45°C)
Storage Temperature	– 40 to + 85°C

Functional Description

Figure 1: Block Diagram

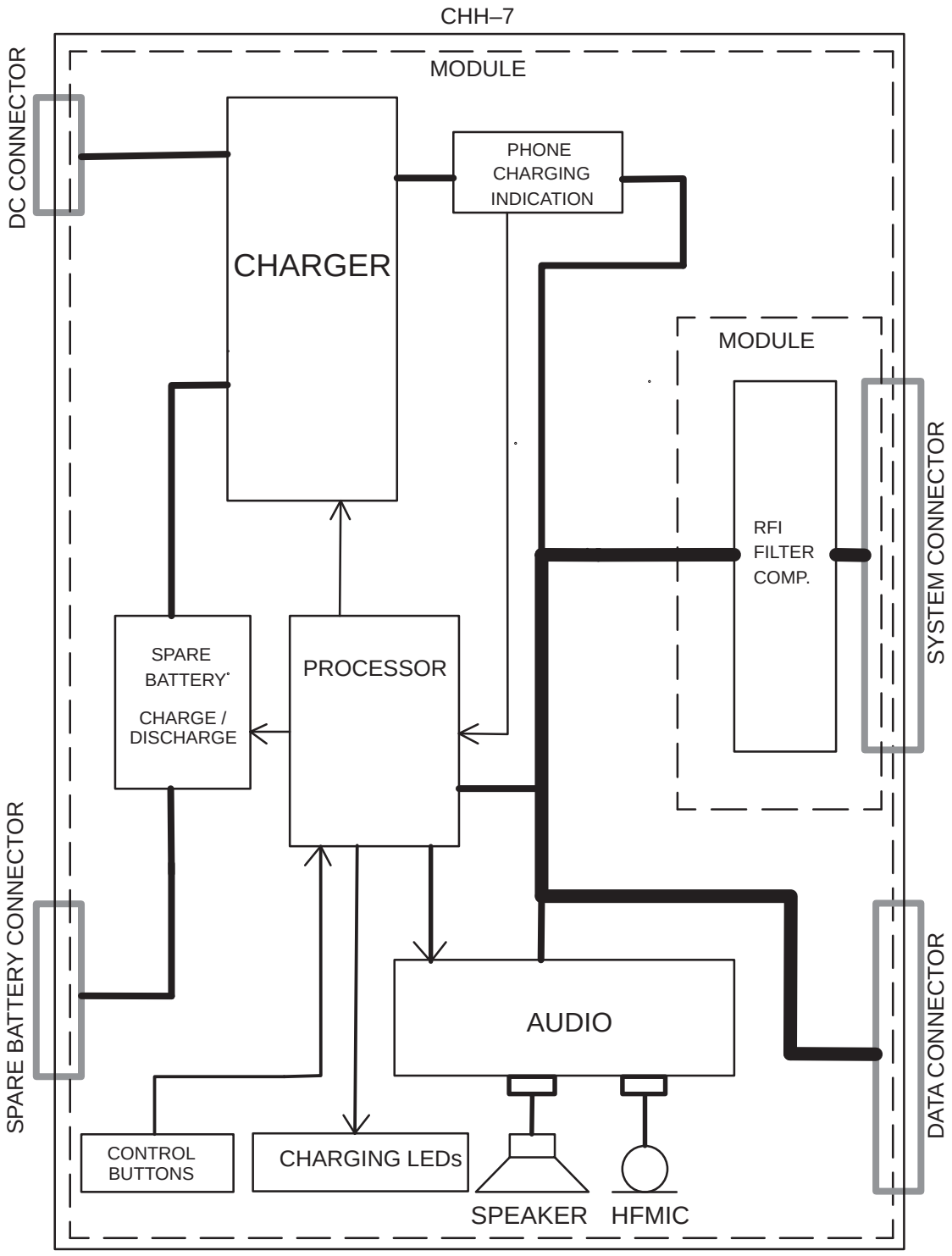
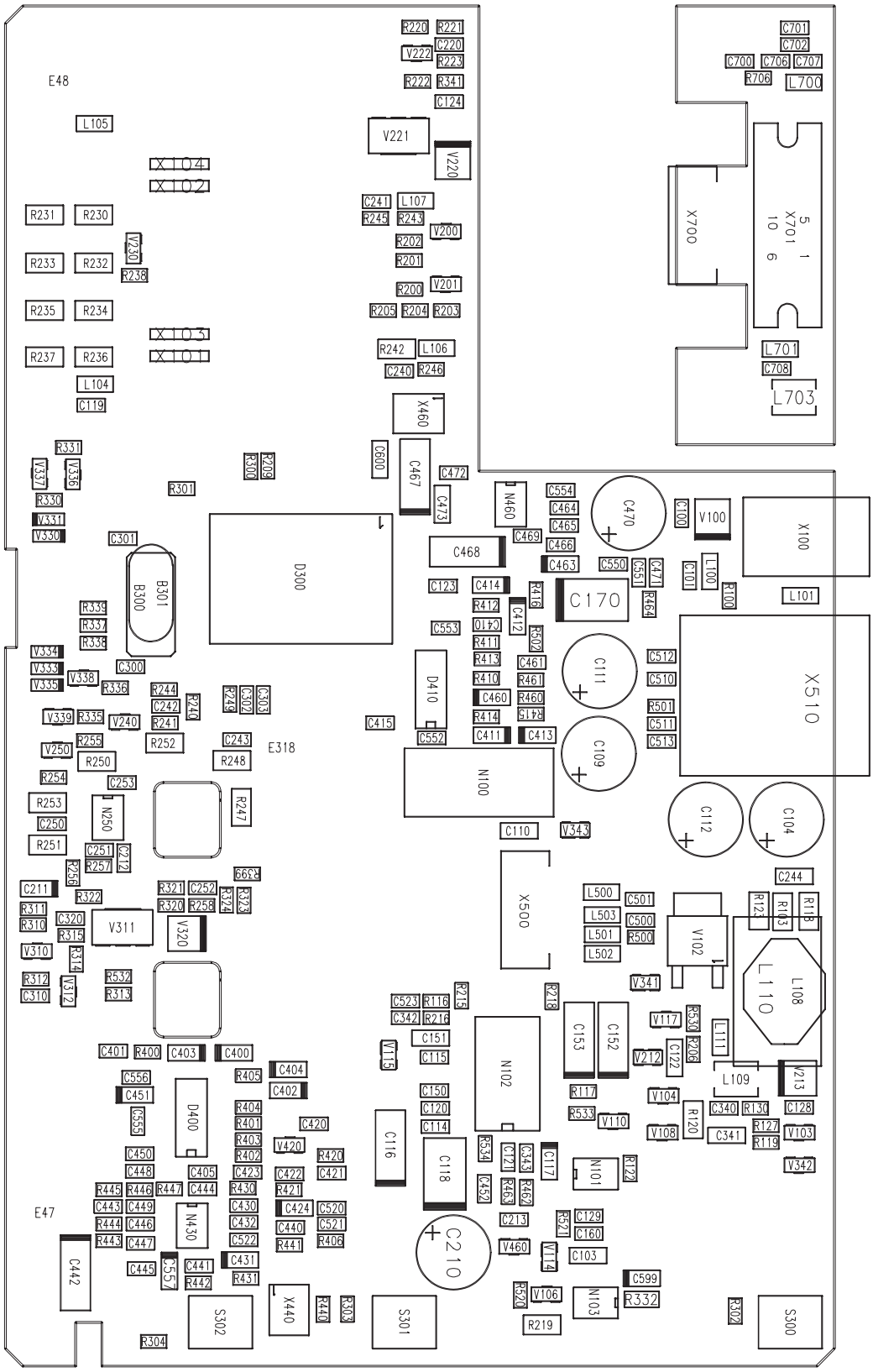


Figure 2: Component Location Diagram



Circuit Description (DC3H)

The DC3H–Module consists of the following functional blocks:

– Supply Voltages

– Control Logic

– Battery Charging

– Spare Battery Discharging

– Watchdog Function

– Switch Mode Power Supply

– Microphone Amplifier and corresponding switches

– Speaker Amplifier and corresponding switches

Refer to Figures 4 and 5 for DC3H circuit diagrams (sheets 1 and 2).

Control Logic

Charging is controlled by processor D300. The D300 is a single–chip type controller incorporating RAM, ROM, an A/D converter, and a multifunction timer/counter. The processor communicates with the phone via the M2BUS. The M2BUS interface comprises transistors V200, V201 and corresponding resistors.

Table 23. Port A Signals of the Processor:

PORT A		NOTES
PA0: PHONE GREEN	(output)	Phone LED control, green: ”1”
PA1: PHONE RED	(output)	Phone LED control, red: ”1”
PA2: SPARE GREEN	(output)	Spare battery LED control, green: ”1”
PA3: SPARE RED	(output)	Spare battery LED control, red: ”1”
PA4: DISCHARGE BUTTON	(input)	Discharge button control, ”0”: start / stop discharge
PA5: SPARE DISCHARGE	(output)	Discharge spare battery, ”1”: discharge enabled
PA6: Unused	(output)	Not Used
PA7: CHARGER	(output)	Charger Switch, ”1”: charger on

Table 24. Port B Signals of the Processor: (continued)

PORT B		NOTES
PB0: SERVICE J301	(output)	See next table
PB1: SERVICE J302	(output)	See next table
PB2: SERVICE J303	(output)	See next table
PB3: SERVICE J304	(output)	See next table
PB4: SERVICE J305	(output)	Not Used
PB5: LAST NUMBER REDIAL	(input)	Last Number Redial button, ”0”: activation
PB6: HFMIC MUTE	(input)	HF Microphone Muting, ”0”: activation
PB7: PHONE IDENTIFICATION	(input)	pulled up +5V (= state ”1”)

Table 25. Service Test Pins of Port B:

J304	J303	J302	J301	NOTES
0	0	0	1	Battery voltage hi limit reached
0	0	1	0	Maximum charge time
0	0	1	1	Voltage drop (delta V)
0	1	0	0	Battery temperature high
0	1	0	1	Constant voltage

Table 26. Port C Signals of the Processor:

PORT C		NOTES
PC0: TXD	(output)	M2BUS Transmit
PC1: RXD	(input)	M2BUS Receive
PC2: Unused	(input)	Not Used
PC3: TRXDINT	(input)	M2BUS Interrupt
PC4: DVCE0	(input)	Device Type ”1” ⇒ ”CHH–7”
PC5: DVCE1	(input)	Device Type ”0”
PC6: SPARE CHARGE	(output)	Spare Battery Charging, ”1”: Charging on
PC7: WATCHDOG	(output)	Watchdog Reset, ”01010...”: Watchdog reset on

Table 27. Port D Signals of the Processor:

PORT D		NOTES
PD0: PHONE MIC	(output)	analogue Switch, ”1”: Phone mic switched on
PD1: ACC MIC	(output)	analogue Switch, ”1”: Accessory mic switched on
PD2: HF MIC	(output)	analogue Switch, ”1”: HF mic switched on
PD3: PHONE EAR	(output)	analogue Switch, ”1”: Phone ear switched on
PD4: ACC EAR	(output)	analogue Switch, ”1”: Accessory ear switched on
PD5: HF SPK	(output)	analogue Switch, ”1”: HF speaker switched on
PD6: Unused	(output)	Not Used
PD7: Unused	(output)	Not Used

Table 28. Port F Signals of the Processor:

PORT F		NOTES
PF0: Unused	(input)	Not Used
PF1: Unused	(input)	Not Used
PF2: Unused	(input)	Not Used
PF3: Unused	(input)	Not Used
PF4: Unused	(input)	Not Used
PF5: Unused	(input)	Not Used
PF6: Unused	(input)	Not Used
PF7: Unused	(input)	Not Used

Table 29. Processor A/D Inputs:

NAME	NOTES
AN0: VBATL	Battery voltage
AN1: VBATH	High resolution battery voltage
AN2: PHOCURDET	Phone current detect
AN3: BATTEMP	Battery temperature
AN4: BATTSZ	Battery size
AN5: CHRGVOLT	Charger voltage detection
AN6: PWR	Phone connection detection
AN7: LIREF	Not Used

Watchdog Function

Under normal operating conditions the processor is pulsating the WATCHDOG–line in order to reset the power–off function of regulator N102. If the processor is not functioning correctly and hence the regulator does not send the pulse to the XPWROFF–line within the 100ms timeout period, the regulator reverts to its power–off state resetting the processor and switching the VAREF and +VAN voltages off. The regulator and the processor can be restarted by pressing the discharge button (S300) once or switching the power supply (connected to X100) off and on. The supply voltage (+VA) for the regulator must be greater than 8.1V in order for the regulator to switch on.

Switch Mode Power Supply (SMPS)

C100 and C101 are the EMI capacitors. L100 and L101 are EMI suppressor chokes. V100 is the voltage suppressor (zener) diode.

The microprocessor D300 pin 2 starts the SMPS by starting reference regulator N103. V115–1 leads the initial current to totally empty the battery. V106 is a constant current source which sets the voltage value of R118. The same voltage appears across the current shunt resistor R103 when the SMPS is working. N101–a is a pulse width modulator. N101–b, together with R122, C103 and V114–1, generates a minimum pulse width. R127 and R521 are input and output voltage correction resistors. V103 limits the comparator power supply +VS. V115–2 and V372 limits the comparator output voltage. V341–1 and C341 form a bootstrap circuit, which acts like a voltage doubler and generates the positive gate voltage to switch the fet V102 gate. L111 (L109), R130 and C340 are EMI–suppression components. L108 is the main SMPS inductor. V110 limits the maximum output voltage.

Battery Charging

Charging current for the phone battery is supplied when the processor switches the SMPS on after the phone is connected to the system connector X701 on the DC4H module. The charger voltage should be between 13.5V and 21.0V. The phone battery's charging state is indicated by the red (V344 / V345) and green (V333) LEDs. Because the phone and the spare battery cannot be charged simultaneously, the charging current of the phone must be detected: this is achieved by a differential amplifier (N250–A) and corresponding resistors.

Charging current for the spare battery is fed in via switching transistor V221 and Schottky diode V220. The transistor is controlled by the processor. When the phone battery is not being charged and hence the spare battery is allowed to charge, the transistor is on and a constant current is supplied to the battery (the red LED V331 lights). In the pulsed charging mode, charging current is adjusted by pulsing this charge current (the green LED V330 lights).

Spare battery voltage and ΔV voltage are determined by reading the VBAT line state. Voltages are measured through resistor divider R250 / R251 and the amplifier N250–B.

Spare battery size is determined by reading the BSI line state. This is pulled to the +5V reference voltage by R243. In the battery pack a 'size' resistor is connected between BSI and GND.

Temperature is measured over the BTEMP line. This line is pulled to the +5V reference voltage by R242. In the battery pack an NTC resistor is connected between BTEMP and GND.

Spare Battery Discharging

The HF desktop charger is also provided with a discharge function. This is activated by pressing the discharge button S300. Resistors R230 to R237 determine the discharge current which is fed through switching transistor V230 which is controlled by the processor. Discharging is indicated by a flashing red LED (V331). The battery is discharged to +5V and thereafter charged normally to full capacity.

Microphone Amplifier and Corresponding Switches

Transistor amplifier circuit V420 and the corresponding resistors and capacitors supply bias current for the microphone. Operational amplifier N430–B amplifies the microphone signal before it is fed to the phone. The gain of the op amp is approximately 38 dB.

The HF microphone signal is fed to the phone via analogue switches D400–B and D400–C. The microphone signal XMIC, from the data accessory (X510) is fed to the phone via switches D400–A and D400–C. The supply voltage for the amplifier and the analogue switches is taken from the +5VAN regulator N102. The +VAREF reference voltage is derived from the N430–A and the +5VAN analogue voltage.

Speaker Amplifier and Corresponding Switches

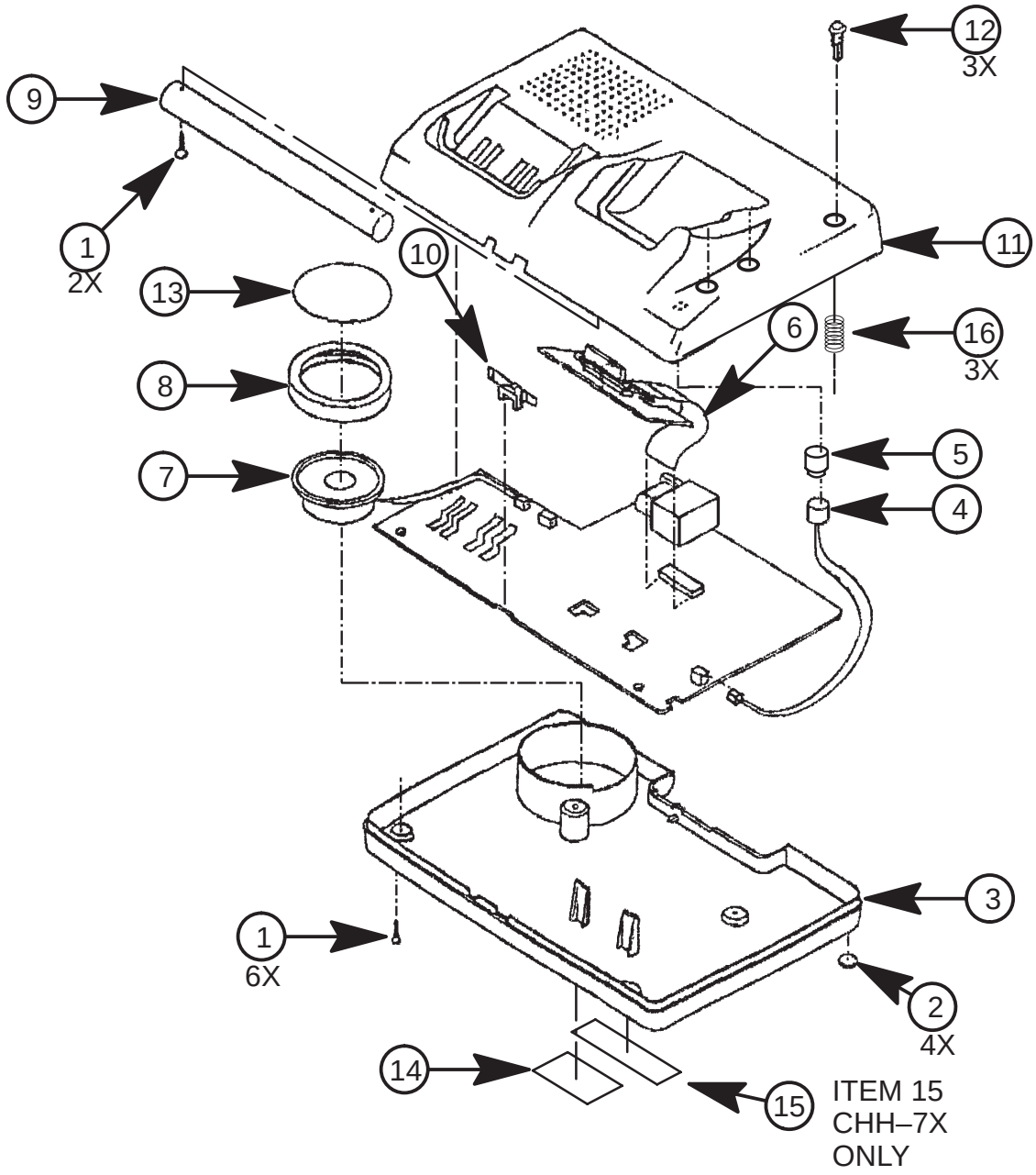
The XEAR signal from the phone is fed to the HF speaker via analogue switches D410–C and D410–B. The XEAR signal is amplified about 23dB (+39dB via amplifier N460, –1dB via the analogue switches, and –15dB via resistors R460 and R461). The XEAR signal from the phone can be fed to data accessory (X510) via analogue switches D410–C and D410–A. The supply voltage +10VAS for the speaker amplifier is derived from the regulator N100.

Circuit Description (DC4H)

The DC4H–module electronics comprise noise reduction components only. 'Spark gaps' E1, E2, E4 and E8 protect against electrostatic discharge. Refer to Figure 6 – Circuit Diagram (sheet 3).

Assembly

Figure 3: Exploded View



Assembly Parts

ITEM	QTY	CODE	DESCRIPTION	VALUE
1	8	6293012	Pt–Screw KB22x8	WN1442
2	4	6501067	Adhesive Foot	D8.0
3	1	9450322	Bottom Cover	D11403
4	1	5140444	Cond. Microphone	63 +/– 2dB
5	1	9460012	Microphone Pad	4D21140
6	1	7133160	Flex Foil	10x0.5, 0.8mm
7	1	5140460	Loudspeaker	8R 2W D=45 H=19
8	1	9460054	Speaker Seal Ring	3D22231
9	1	9560009	Ballast	4D23334
10	1	9460088	Light Guide	3D22992
11	1	9450324	Front Cover	D11402
12	3	9460087	Discharge Button	4D22992
13	1	9480052	Speaker Screen	4D22694
14	1	9380154	Type Label	4D22419
15	1	9380488	BABT Label (CHH–7X only)	A12455
16	3	9560022	Spring (for buttons)	4D24399

DC3H Module Parts List

ITEM	CODE	DESCRIPTION	VALUE	TYPE
R100	1412279	Chip resistor	2.2	5 % 0.063 W 0805
R103	1411123	Melf resistor	0.22	5 % 0.2 W 0204
R116	1414452	Chip resistor	10.0 k	1 % 0.063 W 0805
R117	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R118	1415600	Melf resistor	1.0 k	1 % 0.2 W 0204
R119	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R120	1415784	Melf resistor	4.75 k	1 % 0.2 W 0204
R122	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R123	1415600	Melf resistor	1.0 k	1 % 0.2 W 0204
R127	1414420	Chip resistor	680 k	5 % 0.063 W 0805
R130	1411669	Chip resistor	22	5 % 0.063 W 0805
R200	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R201	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R202	1412729	Chip resistor	33 k	5 % 0.063 W 0805

R203	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R204	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R205	1413917	Chip resistor	150	5 % 0.063 W 0805
R206	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R209	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R215	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R216	1414533	Chip resistor	56 k	1 % 0.063 W 0805
R218	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R219	1415632	Melf resistor	33.0 k	1 % 0.2 W 0204
R220	1413917	Chip resistor	150	5 % 0.063 W 0805
R221	1413917	Chip resistor	150	5 % 0.063 W 0805
R222	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R223	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R230	1415576	Melf resistor	301	1 % 0.2 W 0204
R231	1415576	Melf resistor	301	1 % 0.2 W 0204
R232	1415576	Melf resistor	301	1 % 0.2 W 0204
R233	1415576	Melf resistor	301	1 % 0.2 W 0204
R234	1415576	Melf resistor	301	1 % 0.2 W 0204
R235	1415576	Melf resistor	301	1 % 0.2 W 0204
R236	1415576	Melf resistor	301	1 % 0.2 W 0204
R237	1415576	Melf resistor	301	1 % 0.2 W 0204
R238	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R240	1414533	Chip resistor	56 k	1 % 0.063 W 0805
R241	1414452	Chip resistor	10.0 k	1 % 0.063 W 0805
R242	1415664	Melf resistor	27.4 k	1 % 0.2 W 0204
R243	1414283	Chip resistor	100 k	1 % 0.063 W 0805
R244	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R245	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R246	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R248	1416040	Melf resistor	56.2 k	1 % 0.2 W 0204
R249	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R250	1416160	Melf resistor	100 k	1 % 0.2 W 0204
R251	1416202	Melf resistor	121 k	1 % 0.2 W 0204
R252	1416040	Melf resistor	56.2 k	1 % 0.2 W 0204
R253	1416160	Melf resistor	100 k	1 % 0.2 W 0204
R254	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R255	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R256	1414124	Chip resistor	120 k	5 % 0.063 W 0805
R257	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R258	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R300	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R301	1412729	Chip resistor	33 k	5 % 0.063 W 0805

R302	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R303	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R304	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R310	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R311	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R312	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R313	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R314	1412335	Chip resistor	1.0 k	5 % 0.063 W 0805
R315	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R320	1414533	Chip resistor	56 k	1 % 0.063 W 0805
R321	1414283	Chip resistor	100 k	1 % 0.063 W 0805
R322	1413829	Chip resistor	10	5 % 0.063 W 0805
R323	1414283	Chip resistor	100 k	1 % 0.063 W 0805
R324	1414533	Chip resistor	56 k	1 % 0.063 W 0805
R330	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R331	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R332	1421108	Melf resistor	30.1 k	1 % 0.2 W 0204
R335	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R336	1412536	Chip resistor	22 k	5 % 0.063 W 0805
R337	1412254	Chip resistor	270	5 % 0.063 W 0805
R338	1412198	Chip resistor	56	5 % 0.063 W 0805
R339	1412254	Chip resistor	270	5 % 0.063 W 0805
R341	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R400	1413917	Chip resistor	150	5 % 0.063 W 0805
R401	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R402	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R403	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R404	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R405	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R406	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R410	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R411	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R412	1413917	Chip resistor	150	5 % 0.063 W 0805
R413	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R414	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R415	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R416	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R420	1414043	Chip resistor	1.8 k	5 % 0.063 W 0805
R421	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R430	1412729	Chip resistor	33 k	5 % 0.063 W 0805
R431	1412729	Chip resistor	33 k	5 % 0.063 W 0805
R440	1413917	Chip resistor	150	5 % 0.063 W 0805

R441	1413917	Chip resistor	150	5 % 0.063 W 0805
R442	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R443	1414109	Chip resistor	15 k	5 % 0.063 W 0805
R444	1414109	Chip resistor	15 k	5 % 0.063 W 0805
R445	1412303	Chip resistor	330	5 % 0.063 W 0805
R446	1412729	Chip resistor	33 k	5 % 0.063 W 0805
R447	1413917	Chip resistor	150	5 % 0.063 W 0805
R460	1413603	Chip resistor	47 k	5 % 0.063 W 0805
R461	1414452	Chip resistor	10.0 k	1 % 0.063 W 0805
R462	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R463	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R464	1413850	Chip resistor	4.7	5 % 0.063 W 0805
R500	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R500	1412729	Chip resistor	33 k	5 % 0.063 W 0805
R501	1412430	Chip resistor	10 k	5 % 0.063 W 0805
R501	1412729	Chip resistor	33 k	5 % 0.063 W 0805
R502	1413635	Chip resistor	100 k	5 % 0.063 W 0805
R520	1412423	Chip resistor	4.7 k	5 % 0.063 W 0805
R530	1413836	Chip resistor	47	5 % 0.063 W 0805
R532	1412286	Chip jumper		0805
R533	1413836	Chip resistor	47	5 % 0.063 W 0805
R534	1412303	Chip resistor	330	5 % 0.063 W 0805
C100	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C101	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C103	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C104	2501605	Electrol. cap.	100 u	20 % 35 V RM3.5
C109	2501605	Electrol. cap.	100 u	20 % 35 V RM3.5
C110	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C111	2502736	Electrol. cap.	220 u	20 % 16 V 3.5MM
C112	2502736	Electrol. cap.	220 u	20 % 16 V 3.5MM
C114	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C115	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C116	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C117	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C118	2604495	Tantalum cap.	22 u	20 % 16 V 7.3x4.4x2.8
C119	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C120	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C121	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C122	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C123	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C124	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C128	2310752	Ceramic cap.	10 n	20 % 50 V 0805

C129	2309884	Ceramic cap.	4.7 p	0.25 % 50 V 0805
C150	2310544	Ceramic cap.	1.0 n	5 % 50 V 0805
C151	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C153	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C154	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C160	2310449	Ceramic cap.	150 p	5 % 50 V 0805
C210	2502736	Electrol. cap.	220 u	20 % 16 V 3.5MM
C211	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C212	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C213	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C220	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C240	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C241	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C242	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C243	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C244	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C250	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C251	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C252	2310449	Ceramic cap.	150 p	5 % 50 V 0805
C253	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C300	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C301	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C302	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C303	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C310	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C320	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C340	2310544	Ceramic cap.	1.0 n	5 % 50 V 0805
C341	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C341	2502736	Electrol. cap.	220 u	20 % 16 V 3.5MM
C342	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C343	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C400	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C401	2310488	Ceramic cap.	330 p	5 % 50 V 0805
C402	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C403	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C404	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C405	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C410	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C411	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C412	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C413	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C414	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8

C415	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C420	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C421	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C422	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C423	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C424	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C430	2307816	Ceramic cap.	47 n	20 % 25 V 0805
C431	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C432	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C440	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C441	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C442	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C443	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C444	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C445	2310544	Ceramic cap.	1.0 n	5 % 50 V 0805
C446	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C447	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C448	2310544	Ceramic cap.	1.0 n	5 % 50 V 0805
C449	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C450	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C451	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C452	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C460	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C461	2310738	Ceramic cap.	4.7 n	20 % 50 V 0805
C463	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C464	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C465	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C466	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C467	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C468	2604431	Tantalum cap.	10 u	20 % 16 V 6.0x3.2x2.8
C469	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C470	2502736	Electrol. cap.	220 u	20 % 16 V 3.5MM
C471	2310784	Ceramic cap.	100 n	10 % 25 V 0805
C472	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C473	2309517	Ceramic cap.	100 n	10 % 50 V 1206
C500	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C501	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C510	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C511	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C512	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C513	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C520	2310343	Ceramic cap.	22 p	5 % 50 V 0805

C521	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C522	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C523	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C550	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C551	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C552	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C553	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C554	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C555	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C556	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C599	2604209	Tantalum cap.	1.0 u	20 % 16 V 3.2x1.6x1.8
C600	2309517	Ceramic cap.	100 n	10 % 50 V 1206
L100	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L101	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L104	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L105	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L106	3608519	Chip coil	1.2 u	5 % 1206
L107	3608519	Chip coil	1.2 u	5 % 1206
L110	3607555	Coil		2 A
L111	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L500	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L501	3608519	Chip coil	1.2 u	5 % 1206
L502	3606946	Ferrite bead 0.2r 26r/100MHz		1206
L503	3608519	Chip coil	1.2 u	5 % 1206
B301	4500822	Crystal	11.0592 MHz	CL30PF H=3.6MM
V100	4113828	Trans. supr.	28 V 28 A	600 W DO214AA
V102	4215954	MosFet, RFD14N05	n–ch	50 V 10 A TO252
V103	4107027	Zener diode, BZX84		5 % 16 V 0.3 W SOT23
V104	4210106	Transistor BSR19	npn	14 V 0.6 A SOT23
V106	4200917	Transistor BC848B/BCW32		npn 30 V 100 mA SOT23
V108	4210108	Transistor BSR20, pnp		12 V 0.6 A SOT23
V110	4107160	Zener diode, BZX84		5 % 12 V 0.3 W SOT23
V114	4108639	Diode x 2 BAS28		75 V 250 mA SOT143
V115	4108639	Diode x 2 BAS28		75 V 250 mA SOT143
V117	4107027	Zener diode, BZX84		5 % 16 V 0.3 W SOT23
V200	4200917	Transistor BC848B/BCW32		npn 30 V 100 mA SOT23
V201	4200917	Transistor BC848B/BCW32		npn 30 V 100 mA SOT23
V212	4108639	Diode x 2 BAS28		75 V 250 mA SOT143
V213	4110074	Schottky diode, STPS340U		40 V 3 A SOD6
V220	4110074	Schottky diode, STPS340U		40 V 3 A SOD6
V221	4210020	Transistor BCP69–25		pnp 20 V SOT223
V222	4200917	Transistor BC848B/BCW32		npn 30 V 100 mA SOT23

V230	4200226	Darl. transistor		BCV27	npn 30 V 300 mA SOT23
V240	4100567	Sch. diode x 2		BAS70–04	70V15 mA SERSOT23
V250	4100567	Sch. diode x 2		BAS70–04	70V15 mA SERSOT23
V310	4200909	Transistor	BC858B/BCW30		pnp 30 V 100 mA SOT23
V311	4210020	Transistor	BCP69–25		pnp 20 V SOT223
V312	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V320	4110074	Schottky diode		STPS340U	40 V 3 A SOD6
V330	4864378	LED	Green	2.2 V 0805	
V331	4864380	LED	Red	0805	
V333	4864378	LED	Green	2.2 V 0805	
V334	4864380	LED	Red	0805	
V335	4864380	LED	Red	0805	
V336	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V337	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V338	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V339	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V341	4108639	Diode x 2	BAS28	75 V 250 mA SOT143	
V342	4107027	Zener diode		BZX84	5 % 16 V 0.3 W SOT23
V343	4108639	Diode x 2	BAS28	75 V 250 mA SOT143	
V420	4200917	Transistor	BC848B/BCW32		npn 30 V 100 mA SOT23
V460	4200909	Transistor	BC858B/BCW30		pnp 30 V 100 mA SOT23
D300	4340034	IC, RAM	MCU16/8 QFP64		
D400	4309488	IC, 4 x bi.switch		74HC4066	SO14S
D410	4309488	IC, 4 x bi.switch		74HC4066	SO14S
N100	4309222	IC, regulator		L4810	0.4 A SOT82
N100	4340108	IC, regulator		L4810	10 V 0.4 A SOT194
N101	4305236	IC, 2 x comp.		LM2903	SO8S
N102	4375012	IC, PSL p–supp		NMP75012	SO20
N103	4301062	IC, regulator		LP2951AC	SO8S
N250	4309576	IC, 2 x op.amp.		TLC27M2I	SO8S
N430	4309576	IC, 2 x op.amp.		TLC27M2I	SO8S
N460	4309022	IC, af amp 1w 4r 15V s		TDA7233, SO8	
S300	5200914	Push button switch 2–pole 6x7 smd			
S301	5200914	Push button switch 2–pole 6x7 smd			
S302	5200914	Push button switch 2–pole 6x7 smd			
X100	5414943	Dc–jack d6.3/2 pcb			
X101	9510171	Batt.conn.spring a11401 chh–7			
X102	9510171	Batt.conn.spring a11401 chh–7			
X103	9510171	Batt.conn.spring a11401 chh–7			
X104	9510171	Batt.conn.spring a11401 chh–7			
X440	5416640	Pin header m1x2 p1.5 90deg 1a0r02			1A0R02
X460	5416640	Pin header m1x2 p1.5 90deg 1a0r02			1A0R02

X500	5431710	Flexfoil connect 1x10 0.8mm smd
X510	5401050	Modular jack 10 shielded pcb

DC4H Module Parts List

ITEM	CODE	DESCRIPTION	VALUE	TYPE
R706	1413917	Chip resistor	150	5 % 0.063 W 0805
C700	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C701	2310343	Ceramic cap.	22 p	5 % 50 V 0805
C702	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C706	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C707	2310752	Ceramic cap.	10 n	20 % 50 V 0805
C708	2310343	Ceramic cap.	22 p	5 % 50 V 0805
L700	3606946	Ferrite bead 0.2r 26r/100MHz 1206		
L701	3608519	Chip coil	1.2 u	5 % 1206
L703	0164030	Choke	9 u	
X700	5431710	Flexfoil connect 1x10 0.8mm smd		
X701	5469784	Accessory conn 10af+1rf desk stnd STND		